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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/500,305

06/28/2004

Robert William Clarke

608-423

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23117

7590

08/31/2006

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EXAMINER

PUTTLITZ, KARL J

ART UNIT

PAPER NUMBER

1621

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/500,305	<b>Applicant(s)</b> CLARKE ET AL.	
	<b>Examiner</b> Karl J. Puttlitz	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 19-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>various</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Specification***

The specification requires a Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19, step (d) recites separating at least a portion of the product stream from step (c) and at least a portion of the carboxylic acid and water fraction produced in step (b) by azeotropic distillation into an overhead fraction comprising alkenyl carboxylate and a base fraction comprising carboxylic acid. It is unclear if the recited separation occurs in one column since product stream from step (c) and at least a portion of the carboxylic acid and water fraction produced in step (b) are two separate streams.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 6,143,921 to Karim et al. (Karim).

The rejected claims cover, inter alia, an integrated process for the production of an alkenyl carboxylate which process comprises the steps:

(a) contacting in an oxidation reaction zone a C.sub.2 to C.sub.4 alkane, a molecular oxygen-containing gas, optionally the corresponding alkene and optionally water, in the presence of at least one catalyst active for the oxidation of the alkane to the corresponding alkene and carboxylic acid, to produce a first product stream comprising alkene, carboxylic acid and water;

(b) separating at least a portion of the product stream from step (a) into a fraction comprising the alkene and a fraction comprising the carboxylic acid and water;

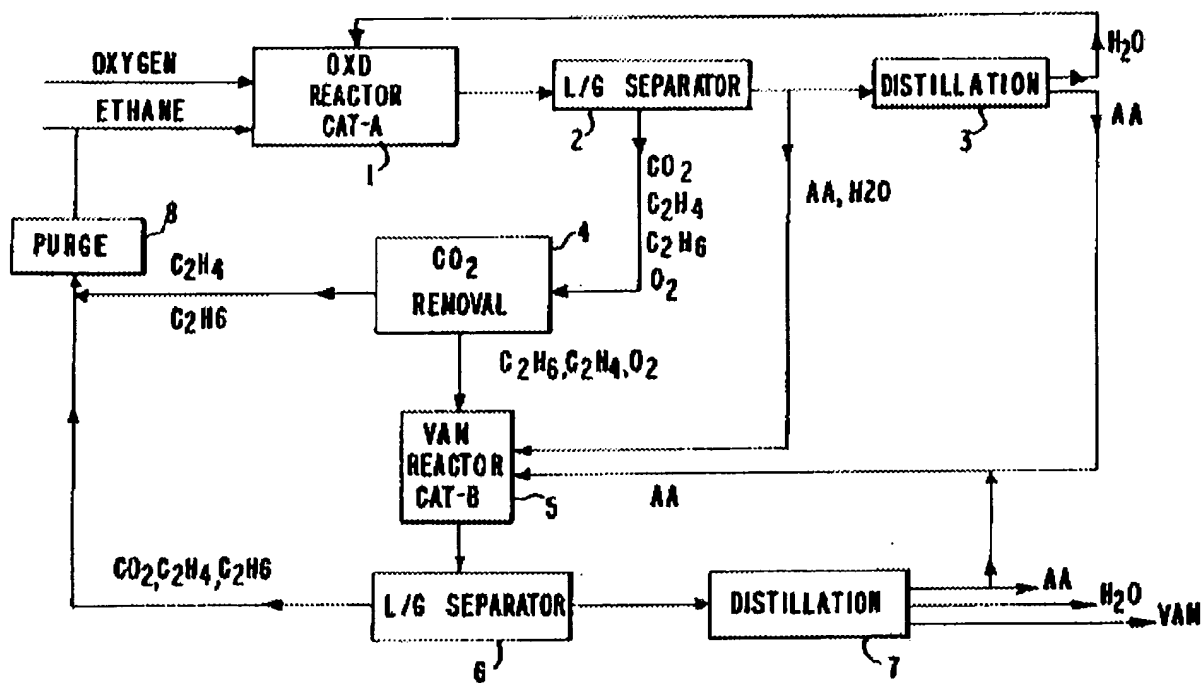
(c) contacting in a second reaction zone at least a portion of said alkene fraction produced in step (b), a carboxylic acid and a molecular oxygen-containing gas, in the presence of at least one catalyst active for the production of alkenyl carboxylate to produce a second product stream comprising alkenyl carboxylate, water and carboxylic acid;

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(d) separating at least a portion of the product stream from step (c) and at least a portion of the carboxylic acid and water fraction produced in step (b) by azeotropic distillation into an overhead fraction comprising alkenyl carboxylate and a base fraction comprising carboxylic acid;

(e) recovering the alkenyl carboxylate from the overhead fraction separated in step (d). See claim 19.

With regard to the above process, Karim teaches a process for the preparation of vinyl acetate monomer with reference to the following figure 1:



wherein a partial oxidation reactor 1 containing the first catalyst (CAT-A) converts fresh and recycled ethane or ethane/ethylene with oxygen into ethylene, acetic acid and carbon dioxide. An optimum amount of water from distillation reactor 3 is also introduced to partial oxidation reactor 1 in order to increase the acetic acid selectivity.

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The effluent from partial oxidation reactor 1 enters a gas/liquid separation unit 2. The gas stream from gas/liquid separation unit 2 is recycled to partial oxidation reactor 1 or goes to carbon dioxide absorption unit 4, where  $\text{CO}_2$  is removed. The liquid stream from gas/liquid separation unit 2 goes to distillation unit 3, where acetic acid is separated from water or the liquid stream from gas/liquid separation unit 2 can directly go to VAM reactor 5 containing a conventional VAM catalyst (CAT-B). The treated gases consisting of ethane, ethylene and oxygen and the liquid stream consisting of acetic acid or acetic acid and water are fed to VAM reactor 5 to produce VAM,  $\text{CO}_2$  and unreacted ethane, ethylene and acetic acid. The effluent of VAM reactor 5 is then fed to gas liquid separation unit 6 where gases including ethane, ethylene and  $\text{CO}_2$  are separated, partially purged to control the build up of non reacting species in purge unit 8 and recycled back to partial oxidation reactor 1. The liquids are sent to distillation unit 7 for recovery of VAM. Acetic acid or unreacted acetic acid is recycled back to VAM reactor 5. See description bridging columns 5 and 6.

The difference between the process covered in the rejected claims and the process disclosed by Karim is that Karim fails to explicitly a separation step of separating at least a portion of the carboxylic acid and water fraction produced in step (b) by azeotropic distillation into an overhead fraction comprising alkenyl carboxylate and a base fraction comprising carboxylic acid. However, separation of a product stream to recover carboxylic acids is within the motivation of those of ordinary skill to recover valuable intermediates, such as acetic acid. Moreover, removal of products as either an overhead or base stream depends on the type of distillation used, and the

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components of the feed stream. Therefore, the rejected claims are prima facie obvious since Karim teaches the elements of these claims with a reasonable expectation of success.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 19-41 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-39 of copending Application No. 10/505,660. Although the conflicting claims are not identical, they are not patentably distinct from each other because although all of the claims of the conflicting application do not recite a step of separating at least a portion of the carboxylic acid and water fraction produced in step (b) by azeotropic distillation into an overhead fraction comprising alkenyl carboxylate and a base fraction comprising carboxylic acid,

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separation of a product stream to recover carboxylic acids is within the motivation of those of ordinary skill to recover valuable intermediates, and is therefore, prima facie obvious.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 19-41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 6,727,380. Although the conflicting claims are not identical, they are not patentably distinct from each other because although all of the claims of the conflicting patent do not recite a step of separating at least a portion of the carboxylic acid and water fraction produced in step (b) by azeotropic distillation into an overhead fraction comprising alkenyl carboxylate and a base fraction comprising carboxylic acid, separation of a product stream to recover carboxylic acids is within the motivation of those of ordinary skill to recover valuable intermediates, and is therefore, prima facie obvious.

Claims 19-41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,548,697. Although the conflicting claims are not identical, they are not patentably distinct from each other because although all of the claims of the conflicting patent do not recite a step of separating at least a portion of the carboxylic acid and water fraction produced in step (b) by azeotropic distillation into an overhead fraction comprising alkenyl



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carboxylate and a base fraction comprising carboxylic acid, separation of a product stream to recover carboxylic acids is within the motivation of those of ordinary skill to recover valuable intermediates, and is therefore, prima facie obvious.

Claims 19-41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-25 of U.S. Patent No. 7,078,563. Although the conflicting claims are not identical, they are not patentably distinct from each other because although all of the claims of the conflicting patent do not recite a step of separating at least a portion of the carboxylic acid and water fraction produced in step (b) by azeotropic distillation into an overhead fraction comprising alkenyl carboxylate and a base fraction comprising carboxylic acid, separation of a product stream to recover carboxylic acids is within the motivation of those of ordinary skill to recover valuable intermediates, and is therefore, prima facie obvious.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl J. Puttlitz whose telephone number is (571) 272-0645. The examiner can normally be reached on Monday to Friday from 9 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K. Page, can be reached at telephone number (571) 272-0602.

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The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karl J. Puttlitz  
*Assistant Examiner*